

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ2004/000197

## A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. <sup>7</sup>: C07F 9/54, A61K 33/42

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

SEE ELECTRONIC DATABASES BELOW

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SEE ELECTRONIC DATABASES BELOW.

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Chemical Abstracts : Sub-structure search.

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No.           |
|-----------|---|---------------------------------|
| X         | WO 2003/016323 A1 (ANTIPODEAN BIOTECHNOLOGY LIMITED) 27 February 2003. (see Claims and Examples)  | 1-20<br>47-50<br>67-87.         |
| X         | KELSO, G. F., et. al. (2002) Prevention of Mitochondrial Oxidative Damage Using Targeted Antioxidants. Annals of the New York Academy of Sciences 959:263-74.   | 1-12,21-<br>42,44-52,56-<br>66. |
| X         | JAUSLIN, M. L. et. al. (2003) Mitochondria-targeted antioxidants protect Friedreich Ataxia fibroblasts from endogenous oxidative stress more effectively than untargeted antioxidants. The FASEB Journal 17(13):1972-4. (published on-line 15 August 2003) (see Abstract, and Discussion) | 1-12,21-<br>42,44-52,56-<br>66. |
| X         | KELSO, G. F., et.al. (16 February 2001) Selective Targeting of a Redox-active Ubiquinone to Mitochondria within Cells. The Journal of Biological Chemistry 276(7):4588-96. (see Abstract, Scheme 1 and Fig.1)   | 1-12,21-<br>42,44-52,56-<br>87  |

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

|   |  |
|---|--|
| * Special categories of cited documents:  |  |
| "A" document defining the general state of the art which is not considered to be of particular relevance  | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  |
| "E" earlier application or patent but published on or after the international filing date   | "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone   |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "O" document referring to an oral disclosure, use, exhibition or other means  | "&" document member of the same patent family  |
| "P" document published prior to the international filing date but later than the priority date claimed  |  |

Date of the actual completion of the international search  
18 October 2004

Date of mailing of the international search report  
1 NOV 2004

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C (Continuation).

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No.   |
|-----------|---|-------------------------|
| X         | US 6331532 B1 (MURPHY, M. P. et. al.) 18 December 2001. (see col. 2 - 3, 19 - 20, and claims)   | 1-12,21-42,44-52,56-87. |
| X         | SARETZKI, G., et. al. (April 2003) MitoQ counteracts telomere shortening and elongates lifespan of fibroblasts under mild oxidative stress. Aging Cell 2:141-3. (see p. 141 and Fig. 1) | 1-12,21-42,44-52,56-66. |

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**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☒ Claims Nos.: 1 – 12, 18 – 30, 33 – 36, 39 – 42, 45 – 47, 51, 57, 59 – 66 (Partially)  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:  
The only support provided for compounds having mitochondrially targeted antioxidant effect are those being methoxyphenyl alkyl triphenylphosphonium or methoxy dioxocyclohexadiene alkyl triphenylphosphonium derivatives. These compounds represent the special technical features of the invention, and hence have been subject to a search. Compounds claimed entirely in terms of having a mitochondrially targeted antioxidant effect, cannot be searched. Hence the above claims have only been searched to the extent that they encompass the above named compound types.
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/NZ2004/000197**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

| Patent Document Cited in<br>Search Report   |          | Patent Family Member |            |    |            |
|---|----------|----------------------|------------|----|------------|
| WO  | 03016323 | EP                   | 1423396    | NZ | 513547     |
| US  | 6331532  | AU                   | 16964/99   | AU | 16965/99   |
|   |          | EP                   | 1047701    | NZ | 505352     |
|   |          | US                   | 2003069208 | US | 2004106579 |
|   |          | WO                   | 9926954    | CA | 2311318    |
|   |          |                      |            | US | 2002052342 |
|   |          |                      |            | WO | 9926582    |
| Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001. |          |                      |            |    |            |
| END OF ANNEX  |          |                      |            |    |            |